D.) Remarks

Objections to the Claims:

Claim 2 was objected to due to a mis-labeling of the claim elements. The clerical error has been corrected by suitable amendment of the claim. Withdrawal of the objection is respectfully requested.

Clerical errors in Claims 9 and 14 have also been corrected.

Objections to the Drawings:

The drawings were objected to under 37 C.F.R. §1.83(a) as not showing a feature corresponding to the claimed "said parallel array of protocol processors," first referenced in Claim 21.

The present specification, at paragraph 49 in reference to Figure 3, states:

> . . . Multiple scalable arrays of data packet processors 58 can be directly connected to the switch fabrics 56 to provide various forms of protocol data processing, characterized as involving significant computation intensive operations. The individual data packet processors 58 may be configured to perform a single protocol conversion operation or multiple related operations. (Emphasis added.)

Parallel arrays of "protocol processors" are also shown as data processors 58' in Figure 3 and crypto processors 86 in Figure 4.

Accordingly, the present specification does provide an appropriate description and further shows the claimed "said parallel array of protocol processors." Withdrawal of the objection is respectfully requested.

Rejections under 35 U.S.C. §112:

Claims 9, 14, and 15 were rejected under 35 U.S.C. §112, 1st ¶, as failing to provide a written description of selecting a protocol processing function from a group of functions.

The present specification, again at paragraph 49, describes the packet processors as permitting configuration "to perform a single protocol conversion operation or multiple related operations." Given that the operations specifically include the related, but complementary operations of encryption and decryption, the ability of the processors to

select among the available functions is absolutely clear to a person of ordinary skill in the art, if not inherent.

In order to remove any possible adequacy of disclosure concern, the specification has been amended at paragraph 49 to recite "to perform a single protocol conversion operation or, by selection, any of multiple related operations." The substance of this amendment is inherently supported by the specification as filed and, further, is directly supported by at least the text of Claim 9, which is part of the original specification. The amendment therefore does not constitute new matter.

Reconsideration of the rejection of Claims 9, 14, and 15 under 35 U.S.C. §112, 1st ¶, is therefore respectfully requested.

Claims 21 through 27 were rejected under 35 U.S.C. §112, 1st ¶ based on the alleged failure of the written description to provide support for the phrase "said parallel array of protocol processors." As established above, this phrase is fully supported by the text of paragraph 49 of the specification as filed. Reconsideration of the rejection of Claims 21 through 27 under 35 U.S.C. §112, 1st ¶, is therefore respectfully requested.

Claims 2 and 8 through 15 were rejected under 35 U.S.C. §112, 2nd ¶, as being indefinite.

Claim 2 was asserted as being indefinite due to the use of the phrase "a like" (only Claim 2 contains this phrase). In context, the complete phrase is "a plurality of data protocol processors coupled to a like plurality of said first data ports of said data packet switch." The use of "a like plurality" in this manner is a long-standing, standard claiming practice well-accepted as indicating a definite "same as"-type relation. An issued claims search will demonstrate the wide prevalence of usage over the years; for example, see United States Patents 6,646,982, 5,747,870, 4,647,843 and 3,733,001. Furthermore, in the present instance, the ordinary meaning of the "a like plurality" language, when read in context, unquestionably means a plurality of the same number. Reconsideration of the rejection of Claim 2 under 35 U.S.C. §112, 2nd ¶, is therefore respectfully requested.

The phrase "the aggregate performance" is Claim 8 was asserted to lack antecedent basis. Claims 9 through 15 were rejected as dependent from the rejected Claim 8.

Claim 8 is a method claim that uses the functional limitation "so as to enable utilization of the aggregate performance of said second processors" in qualifying the performance of the method step of "selectively distributing said predetermined network data packets to a plurality of second processors."

The claim clearly establishes that there are multiple second processors and that the processors each and together perform "a compute intensive data processing function." The second processors collectively have an inherent "aggregate performance" in "performing said compute intensive data processing function." This inherent quality is correctly referred to functionally as "the aggregate performance of said second processors in performing said compute intensive data processing function."

Applicants' Attorney respectfully asserts that the functional qualification as presented is therefore clear, definite, and correct under the requirements of 35 U.S.C. §112, 2nd ¶. Reconsideration of the rejection of Claims 8 through 15 is requested.

Rejections under 35 U.S.C. §102:

In order to establish a rejection under 35 U.S.C. §102, all elements of a claim must be identically found in a prior art reference. See, M.P.E.P. §706.02 (For anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present) (emphasis added); M.P.E.P. §2112 (In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original); M.P.E.P. §2131.

The essential nature of anticipatory identity requires that the function of the elements and their interconnections not just be colorably similar, but identical in all aspects. See, Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (The identical invention must be shown [by the reference] in as complete detail as is contained in the ... claim). Clearly, a prior art reference that discloses a collection of elements that are assembled differently and that function collectively in a different or incomplete way compared to the claimed invention is not an anticipating reference.

Claims 1 – 6, 8, 10 – 13, 16 – 18, and 21 – 24 were rejected under 35 U.S.C. §102(e) as anticipated by Almulhem et al. (US Patent 6,587,431).

In summary, Almulhem teaches nothing more relevant than a switch-fabric based router. Each functional node in the system identically implements just an ingress block 302, egress block 304, and a connecting switch-fabric.

The rejected claims, in their different specific formulations, each require "data packet processors" (Claim 1), "data protocol processors" (Claims 2 and 3), "second processors"

(Claim 8), "protocol transformation processors" (Claim 16) and "protocol processors" (Claim 21).

The Action indicates that these claimed protocol processors are shown in Almulhem, at col 7, lns 10 – 44 and col 8, lns 30 – 39. The indicated sections, however, describe nothing more than the ingress, egress, and switch-fabric management processors. These sections, at best, describe only ingress and egress processors that add conventional IP packet forwarding headers to all packets enable routing through the switch fabric; these processors do process data packets. The EPI processor 308 and other management processors only operate coordinate the routing operation between the ingress and egress processors (col 9, lns 59 et seq); these processors do not process packets: they are not data packet processors.

Thus, the ingress and egress processors of Almulhem correspond to, for example, the "network connection processors" of Claim 1. The EPI processor corresponds to the control processor 84 described in the present specification. There are no remaining Almulhem processors that could correspond to the various "data packet processors" (Claim 1). That is, Almulhem simply does not show any additional "data packet processors [that] perform a data processing function over data contained within predetermined data packets" (Claim 1). Almulhem similarly fails with regard to the remaining rejected claims.

Therefore, Claims 1 – 6, 8, 10 – 13, 16 – 18, and 21 – 24 are not anticipated under 35 U.S.C. §102(e). Reconsideration of the rejection of these claims is respectfully requested.

Rejections under 35 U.S.C. §103:

Claims not identically shown by a reference otherwise available under 35 U.S.C. §102(a), (b), or (e) may be obvious under 35 U.S.C. §103. To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. (Emphasis added.) In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See also, M.P.E.P. §§2142, 2143.

Claims 1 through 14:

Claims 7, 9 and 14 were rejected under 35 U.S.C. §103(a) in view of Almulhem and Arrow et al. (US Patent 6,226,751). For purposes of completeness, Claims 1 – 6, 8, and 10 – 13 will be considered as equally rejected under 35 U.S.C. §103(a).

Almulhem essentially describes a multi-link router where identical IPF nodes support super-trunk transport of data packets between router end-points. Each node includes ingress and egress processors that connect to the switch-fabric, allowing bidirectional flow. An identically structured header is added to each packet that passes through the router to allow the route controller to manage load balancing distribution and correctly re-ordered delivery of the data packet stream. The header is added by the initially encountered ingress processor and stripped by the last egress processor. Thus, packets initially received by the Almulhem router are no different from the packets as finally delivered; the added packet headers are used internally only and the router does not effect any change on the payload data held by the underlying data packets.

As explained by Almulhem, the issues of principal, if not exclusive, concern in implementing the multi-link router are speed and ultimate delivery of data packets identically as originally received in terms of form and order.

Arrow describes a VPN unit that is implemented as a software component. Each VPN component implements an encryption/decryption module and potentially other data processing modules. Individual VPN components are installed directly on client computer systems or installed as dedicated VPN units shared by multiple client computer systems.

As taught by Arrow, VPN units 115, 126 in the shared configuration can be efficiently located on the outbound side of the local routers 114, 124 to take advantage of the data stream concentrating function of the routers. Placement on the inbound side of a router 134 is achieved by routing proxy tunnels between the clients 131, 132 and router 134 through the VPN unit 135. The remaining alternative is to implement the VPN component directly on individual client computer systems.

Motivation to Combine References

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Arrow itself is entirely silent as to any reason or need to place the VPN components in any other location or to suggest that there is any deficiency of any nature in the locations described. Arrow is entirely comfortable with available flexibility in locating the VPN

components where and as needed to support VPN connections between all computer systems. Almulhem is equally silent as to any reason or need to add any additional function of any nature to the multi-link router described.

Arrow mentions the network use of routers and Almulhem acknowledges that the multi-link router must allow transmission of VPN packets. Neither reference provides any suggestion, explicit or implicit, of any possible benefit for combining any particular features of the other. Thus, the references themselves fail to provide any motivation to even consider combination.

The Action proffers that a person of ordinary skill in the art would have been motivated to combine the references "because a strong encryption scheme can essentially guarantee privacy" and "utilizing compression formats requires less space than sending data uncompressed."

While true in a generic sense, the proffered motivations are functionally irrelevant to why a person of ordinary skill in the art would consider combining these two specific references. That 'strong encryption promotes privacy' is simply a truism that motivates nothing more than having a VPN capability between some endpoints. That 'compression reduces bandwidth used' is an equally open truism. In the present instance, Arrow demonstrates that entirely secure and bandwidth efficient VPNs can be readily established wholly independent of their placement relative to routers and even entirely in the absence of routers. Almulhem demonstrates that very high-performance routers can be constructed and used without any need or limitation on the use of VPNs of any description.

Given that a person of ordinary skill in the art knew of both routers and VPNs, the absence of any explicit or implicit suggestion to combine features instead indicates that such persons recognized substantive reasons for not combining. Specifically, the use of independent routers and VPNs provides a fundamental separation-of-concerns that, as so clearly demonstrated by Arrow, allows network systems to be flexibly architected. Such persons would have also have reasonably considered that implementing VPN components within super-trunk capable routers, such as Almulhem, fundamentally removes security far from the clients, thereby undesirably reducing the effectiveness of the VPN security. Furthermore, a security failure in a super-trunk capable router would present an unacceptable wide scope of exposure. Persons of ordinary skill in the art would instead consider a far more fine grained control over security to be desirable if not a requirement.

Therefore, had a person of ordinary skill in the art even considered the combination proposed in the Action, the only truly credible motivation would have been to entirely reject the combination. A prima facie case of obviousness may be rebutted by showing that the

art, in any material respect, teaches away from the claimed invention. In re Geisler, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

Inability to Combine References

Even beyond the lack of any credible motivation to combine, the references themselves fail to provide any indication of how, if at all, the teachings of the references could actually be combined. The relevant legal standard is clear: that "[t]he suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved." WMS Gaming, Inc. v. International Game Tech., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). However, there still must be evidence that "a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." In re Rouffet, 149 F.3d at 1357, 47 USPQ2d at 1456; see also In re Werner Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("[A] rejection cannot be predicated on the mere identification . . . of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.").

Even if given the suggestion to combine the references, a person of ordinary skill in the art would have no reasonable idea of where the VPN component could be installed within the Almulhem architecture. At best, since the Arrow system is taught as being a single connection device, the only configuration consistent with the teachings of the references would be to connect separate VPN units at either or both of the TCPIN 220 and TCPOUT 232 ports of the Almulhem router. Such would likely accomplish nothing more than the existing behavior of the separate Arrow and Almulhem devices.

If, instead, there was some suggestion to connect the VPN component somewhere internal to Almulhem, the references fail to provide any indication of where such a connection could be made. The VPN component, as taught by Arrow, requires embedding in an operating system. Almulhem provides none. Even if a person of ordinary skill were to think of connecting a full VPN unit are to one of the internal IPF units or elsewhere internally, the ordinarily expected result would be a failure. The ordinary operation of the VPN unit would have the effect of wrapping of the Almulhem super-trunk control header under a VPN header, effectively securing the super-trunk control header. The necessary result, as would be quickly recognized by a person of ordinary skill, is the egress processors would be unable to process packets based on the encrypted headers. Thus, a person of

ordinary skill in the art would have no expectation of success if a VPN unit were connected internal to Almulhem.

Whatever modifications might be made to enable an actual combination of Arrow and Almulhem and achieve any working device are clearly beyond the ability of a person of ordinary skill in the art. Nothing in the references provides any indication of what those modifications might be or why any specific set be chosen to arrive at the claimed structures and methods. The Action as well provides no explanation of how or why a person of ordinary skill in the art would know to make any modifications to achieve any usable combination, let alone the specific claimed combinations. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Thus, while a theoretical combination of Almulhem and Arrow is easy to propose, in the present instance the proposal is nothing more than an improper use of hindsight based on a knowledge of Applicants' own disclosure.

In contrast to the asserted references, the present invention, particularly as set forth in independent Claims 1, 2, 3, and 8, describes a data packet processing system generally characterized as providing a plurality of dedicated packet processors that are coupled through a switch-fabric to network processors that, in turn, interface to external network connections. The network processors route and load balance data packet streams directed through the switch fabric to the multiple data packet processors. The packet processing that might otherwise affect the ability of the network processors or the network at large to correctly route the data packets is performed by the data packet processors. To accommodate the compute intensive load to be handled by the packet processing processors, the claims expressly require connection of the data packet processors as a plurality fully accessible to the network processors through the internal switch-fabric.

This structure and method of operation is directly reflected in the claim language of independent Claims 1, 2, 3, and 8:

Claim 1 structurally requires a "plurality of data packet processors coupled through a data switch fabric between network connection processors." Thus, the data packet processors are connected on one side of the switch fabric. The network connection processors are connected to the other side and further function to provide connections to an external network. The data packet transfer path is therefore bidirectionally through the fabric between the network connection processors and the data packet processors.

Claim 2 structurally requires "a data packet switch" that provides separate data port connections to "a plurality of data protocol processors" and to "input and output data transfer processors." The data stream packet transfers between the protocol processors and the transfer processors are conducted bidirectionally through the switch-fabric.

Claim 3 structurally requires "a switch providing data routing between input, output, and processing ports" to which are respectively connected "an array of protocol processors," "an input processor," and "an output processor."

Claim 8 requires the steps of "receiving, by a first processor" data packets from a first network that are then internally routed by "selectively distributing said predetermined network data packets to a plurality of second processors" for compute intensive processing. The method then requires "collecting, by a third processor" and "transferring said converted network data packets to said second network."

Consequently, these independent claims, and their dependencies, clearly require a structure and method of operation not taught or suggested by any proper combination of Almulhem and Arrow, even if credible motivation to consider combining the references existed. Accordingly, Applicants respectfully request reconsideration of the rejection of Claims 1 through 14.

Claims 15 through 27:

Claims 15, 19, 20, and 25 – 27 were rejected under 35 U.S.C. §103(a) in view of Booth, III et al. (US Patent 6,668,282) and either Almulhem or Almulhem and Arrow. For purposes of completeness, Claims 16 – 18, and 21 – 24 will be considered as equally rejected under 35 U.S.C. §103(a).

The Booth reference describes use of a basic network packet encapsulation technique to enable a data packet to be round-tripped through a VPN tunnel implementing conventional IPsec encryption. The source computer system, simply identified as a first network element, requests VPN transfer of a data packet to a destination computer system terminating the VPN connection. The packet is encrypted and wrapped with a header identifying the terminal system. On receipt, the header is removed and the packet is decrypted for final delivery. The innovation described by Booth is that the final delivery IP address carried by the data packet is in fact that of the source computer system. Thus, the destination system blindly retransmits the data packet through the VPN connection to the source computer system for accounting.

Other than demonstrating the conventional use of IPsec protocols, the Booth reference presents little of relevance to the structure and method of operating described in the rejected

claims. Booth does not disclose any additional or dedicated or compute intensive packet data processor. Booth does not teach or suggest any need for additional, compute intensive data packet processors. Booth makes no notable mention of the use or presence of routers or the connection of any processors to any switch-fabric.

Booth also provides no specifically applicable motivation to be combined with the other references. The asserted motivation, namely "a big advantage of IPsec is that security arrangements could be handled without requiring changes to individual user computers," is questionable (or not understood) and, in any event, functionally irrelevant to specifically motivate any person to consider combining the teachings of these specific references. IPsec typically requires authentication of anyone or any computer system that attempts to make use of the protected VPN connection. Changing the location of the VPN connection point would not seem to make any difference to the required management or user burden. In any event, Booth does not teach or suggest, and the Action provides no explanation of any benefit to moving the location of a VPN connection point to any particular point, let alone one that would coincide with the placement of a router. Rather, a person of ordinary skill in the art would more likely consider combining a VPN with a router as reducing the flexibility of network configuration and undesirably moving the security afforded by a VPN connection further away from the users.

Even if motivation were given, Booth and Almulhem, together or in further combination with Arrow, fail to teach or suggest using a plurality of dedicated data packet processors or, further, any way of incorporating such a plurality through an internal switch-fabric to perform compute intensive packet data stream processing with any expectation of success. The fact that IPsec protocols exist and can be used in the implementation of VPN connections, as taught by Booth, does not add any relevant teaching or suggestion as to how Almulhem could be combined with Arrow to realize the structure as specifically claimed in the independent base Claims 8, 16, and 21.

Similar to Claim 8 as detailed above, Claim 16 requires the steps of "receiving, through a first network connection" data packets from a first network and then internally "distributing said select network data packets to a plurality of protocol transformation processors." These protocol transformation processors collectively convert and provide "converted network data packets" that are then collected for "sending said converted network data packets through a second network connection."

Claim 21 requires "a switch fabric implementing programmable channel transfer of data between first, second, and third fabric interface ports." An "ingress processor" and an "egress processor" are specified as connecting between networks connections and respective first and second fabric interface ports on the switch fabric. The third fabric interface ports

are connected to "a parallel array of protocol processors [that implement] a compute intensive network packet transformation function between said first and second protocol formats for data packets passed through said parallel array of protocol processors."

The teachings of Almulhem, Arrow, and Booth, fairly considered, do not describe these specific structures or methods. Nothing in the references themselves, as viewed by a person of ordinary skill in the art, suggests or explains how multiple protocol processors could or should be configured relative to a switch fabric for any reason, let alone to efficiently provide a compute intensive packet processing function.

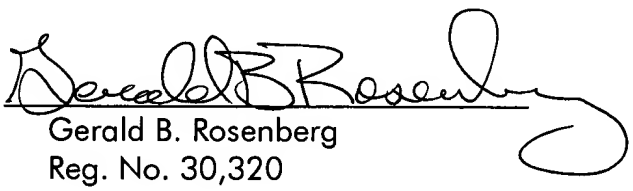
Dependent Claim 15 and independent Claims 16 and 21, and their dependents, are therefore not taught or suggested by any proper combination of Almulhem, Arrow and Booth, even if credible motivation to consider combining the references existed. Accordingly, Applicants respectfully request reconsideration of the rejection of Claims 15 through 27.

Conclusion:

In view of the above Amendments and Remarks, Applicants respectfully assert that Claims 1 through 27 are now properly in condition for allowance. The Examiner is respectfully requested to take action consistent therewith and pass this application on to issuance. The Examiner is respectfully requested to contact the Applicants' Attorney, at the telephone number provided below, in regard to any matter that the Examiner may identify that might be resolved through a teleconference with the Examiner.

Respectfully submitted,

Date: 9/30/2005

By: 

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